

IMPROVED LIQUID FOAMING SOAP COMPOSITIONS

RELATED APPLICATIONS

This application is a continuation-in-part of U.S. Patent Application Serial No. 09/783,060, filed February 14, 2001 entitled LIQUID FOAMING SOAP COMPOSITIONS which is related to U.S. Provisional Patent Application Serial No. 60/183,307, filed February 17, 2001 entitled ALL NATURAL, LIQUID FOAMING SOAP.

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TECHNICAL FIELD

This invention relates to liquid soap formulations constructed for being dispensed as a foam product and, more particularly, to improved liquid formulations capable of being dispensed as a foam product for use in a wide variety of alternate applications, including for washing, shaving and use for medicinal or medical purposes.

BACKGROUND ART

Recently, the use of liquid soap has become extremely popular, with the ease and convenience provided by such products being appreciated by many individuals. However, in spite of the popularity of liquid soap, no widely useable, multi-purpose, effective liquid soap product has been developed which is capable of being dispensed as a foam mousse product to provide consumers with the substantially increased benefits inherent in a foam mousse and be useable for shaving and medical applications.

By providing an improved liquid soap formulation which are capable of being dispensed from a desired container as a foam mousse, consumers enjoy a wide variety of substantially enhanced benefits. In using any soap product, whether liquid or solid, the consumer is required to place a desired amount of the soap product in one's hands or on the area to be washed, and then vigorously rub the soap product in the hands or target site in order to develop a lather or foam, in order to achieve the desired cleaning. However, by dispensing the improved liquid soap product as a foam mousse directly from the container, ease of application and use of the product is enhanced.

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A further benefit achieved from dispensing liquid soap as a foam mousse is a substantial reduction in the quantity of the product that must be dispensed at any particular time for any desired purpose. The foam mousse is produced by intermixing air into the soap formulations to produce the foam mousse product being dispensed. As a result, substantially less product is consumed at any particular time, thereby saving the consumer a substantial expense by controlling the amount of product being dispensed and thereby preventing unwanted wasting of product.

Another area in which consumer needs and desires have not been satisfied is in the area of shaving for both men and women. Although various shaving creams and foams have been created in attempting to provide a smooth, comfortable shave to men and women, manufacturers have typically resorted to producing shaving foams which rely upon aerosols or other foam producing gases.

Although these typical prior art products produce foams of various thicknesses and densities, these prior art products are incapable of achieving a product which is completely devoid of aerosols or other foaming agents or ingredients. Furthermore, such prior art products are bulky and require large

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features described above, which is capable of being dispensed from non-aerosol containers and produces a thick, rich, dense, foam mousse.

A further object of the present invention is to provide a multi-purpose, highly effective, liquid foam soap delivery system having the characteristic features described above, which incorporates an effective amount of a medical or medicinal ingredient for further enhancing the use and application of the present invention in a wide variety of alternate purposes.

Other and more specific objects will in part be obvious and will in part appear hereinafter.

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The principal feature of the present invention is the attainment of an improved liquid based soap formulation which is capable of being employed with and dispensed from non-aerosol, foam-producing containers in a consistent and repeatable manner. Typically, conventional liquid soap formulations are incapable of repeatedly passing through the foam producing dispensing heads associated with foam containers/dispensers. Due to the inherent nature of conventional liquid soap, the fine mesh screens employed with foam heads are quickly clogged, preventing the effective, reliable use of conventional liquid soap in this manner.

With the present invention, a unique improved liquid soap formulation is realized which eliminates the prior art inabilities and provides a formulation which is effectively dispensed from foam producing dispensing heads in a consistent, reliable and repeatable manner, free from clogging failures. In accordance with the present invention, the principal ingredients are a mixture of surfactants, which inherently possess foam enhancing or foam producing qualities, and water with the quantity of water employed representing a critical factor. In order to achieve a formulation which is capable of being dispensed as a foam mousse, the total water employed must range between about 40% and 80% by weight of the total weight of the entire composition.

An additional ingredient which is preferably incorporated into the liquid foaming soap formulations of the present invention comprises one or more therapeutic agents. As is more fully detailed below, by incorporating a therapeutic agent, the present invention achieves a unique, universally employable, foam mousse product which is capable of being used in a wide variety of alternate applications for a wide variety of alternate purposes. In this regard, the presence of a therapeutic agent in the liquid foam soap formulation substantially enhances the usability and applicability of the liquid foam soap product, while also

In accordance with the present invention, it has been found that the quantity of the surfactants employed in the composition preferably ranges between about 5% and 70% by weight based upon the total weight of the entire composition.

The final ingredient incorporated into the improved liquid based foaming soap composition of the present invention is one or more therapeutic agents, used to achieve a desired, targeted or multi-functional result. In employing a therapeutic agent, the effective amount needed to achieve the desired result is employed.

In Table I, the overall composition discussed above is fully detailed. This composition represents the preferred formulation for achieving the goals of the present invention.

TABLE I

Liquid Foaming Soap Composition

<u>Ingredient</u>	<u>% by Weight</u>
Mixture of Surfactants	5 - 70
Therapeutic Agent	Effective Amount
Water	40 - 95
pH adjusting agent	As needed

In carrying out the teaching of the present invention, it has been found that one or more surfactants are preferably employed, with the surfactants being selected from the group consisting of polysorbate 20, cocoamide DEA, , polysorbate 60, polysorbate 80, ammonium or alkaline salts of sulfated aliphatic alcohols, ammonium or alkaline salts of sulfated aliphatic ethoxylated alcohols, cocoamido derivatives and ethoxylated aliphatic phenolics.

By employing formulations made in accordance with the foregoing teaching, it has been found that a highly effective, multi-purpose liquid based foaming soap product is achieved. One of the principal features of this formulation is that the pH resulting from this composition is relatively mild for most uses. However, if desired, the pH is easily adjusted to range between about 7.0

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of these therapeutic agents provides a particular target area or desirable function for enabling the improved liquid foaming soap composition of the present invention to be used to attain results previously thought to be unattainable.

One product area which typifies a composition of the present invention is the creation of an antiseptic, anti-bacterial, or anti-microbial liquid based foaming soap for general, everyday use, and/or for application wherein an antiseptic or anti-bacterial soap is desired. In order to attain a product of this nature, it has been found that by incorporating triclosan as the therapeutic agent, a highly effective, anti-bacterial, antiseptic and/or anti-microbial liquid based foaming soap product is realized. In addition, by adding nonoxynol-9 as the therapeutic agent, an anti-viral formation is attained to be used for medicinal or medical purposes in hospitals, nursing homes, and elderly housing for use when water is not available, or for general cleanliness. Furthermore, it has also been found that the use of an aqueous solution of silver nitrate as the therapeutic agent creates a formulation which can be employed for treating burn victims.

In Table II, a preferred formulation for using triclosan in the liquid foaming soap product of the present invention is detailed, while Table III provides a more detailed formulation, with the specific ingredients for all functions being provided. In formulating this product, the established effective amount of triclosan

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ranges between about 0.2% and 2.0% by weight based upon the total weight of the composition.

TABLE II

Anti-Bacterial/Antiseptic Foaming Soap

<u>Ingredient</u>	<u>% by Weight</u>
Mixtures of Surfactants	5 - 70
Triclosan	0.2 - 2.0
Water	40 - 95
pH Adjusting Agent	As needed

TABLE III

Anti-Bacterial/Antiseptic Foaming Soap

<u>Ingredient</u>	<u>% by Weight</u>
Polysorbate 20	5 - 30
Cocoamide DEA	3 - 10
Ammonium Lauryl Sulfate	25 - 40
Triclosan	0.2 - 2.0
Water	40 - 80
pH Adjusting Agent	(q.s. for pH of 6.5 -8.0)

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In achieving an effective, useable and desirable anti-bacterial/antiseptic liquid foaming soap product which employs triclosan, it has been found that polysorbate 20 is preferably employed as a surfactant in order to allow the triclosan to be dissolved in the aqueous solution. Since triclosan is not water soluble, an agent is required to dissolve the triclosan into the solution. Although polysorbate 20 is preferred for this purpose, another equally effective agent may also be used.

In addition, it has also been discovered that the quantity of cocoamide DEA employed in the composition preferably ranges between about 3% and 30% of the quantity employed for the ammonium lauryl sulfate. By employing these parameters, a highly effective, multi-purpose, antiseptic/anti-bacterial liquid foaming soap product is achieved.

In addition to achieving an effective antiseptic/anti-bacterial liquid foaming soap composition, the foregoing composition also possesses a pH of about 6.5 to 8.0. This result is attained by employing the ingredients such as citric acid or equivalent, in the quantities detailed above, along with a small quantity of one or more pH adjusting agents which are well known to those skilled in this art.

invention to produce a resulting product capable of resolving problems that have been unresolved for long time periods.

By employing the compositions detailed above for attaining an anti-bacterial, anti-viral, and/or anti-microbial liquid foaming soap product, a safe, and effective delivery system is realized for enabling any individual or healthcare provider to quickly, easily, and conveniently apply a soap product directly to areas which are otherwise incapable of being easily accessed, with complete assurance that both cleaning and anti-viral medication is simultaneously delivered precisely to the site where needed. As a result, by employing the present invention, areas of the body are capable of been effectively treated where presently no effective treatment is available.

It is our intent to take advantage of the well-known phenomena caused by surface active agents on cohesion and surface tension to make use of the foam mousse product as a medical device when used with a formulation composed of an anti-bacterial or anti-viral drug and in some cases a combination of the two. The anti-bacterial foam soap composition that includes Triclosan in the formulation has been produced and has been found to help eliminate bladder infection in women caused by improper or negligent habits when using the toilet.

The pH of the anti-bacterial soap formula had to be lowered to 7 in order to accommodate any tender skin areas. A small amount of the foam mousse interspersed with triclosan or other anti-bacterial, or the anti-viral agent, such as nonoxynol-9, when applied onto toilet tissue to the rectum and vaginal area, helps in reducing the chance for this type of bladder infection. The foam mousse dries rapidly and the film of soap is gentle and does not cause any irritation. The film can be removed by simply wetting toilet tissue after 30 seconds if necessary. The foam mousse is packagable in a pocketbook size three ounce foamer.

There are many other areas in which the anti-bacterial/anti-viral foam soap compositions of this invention can be used as a medical device such as within a hospital setting, the workplace, in the home, the armed services, or any other event that an open wound of any size is a possibility. In a hospital or surgical setting, protection from viral or bacterial infections is a priority. With the use of a foamer and the proper antiseptic foam, a protective skin is produced that should protect the cells surrounding the wound from infection. It follows that the same protective event will follow in any location where an open wound or cut has happened.

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In an alternate configuration, the prior art foam delivery dispenser comprises a soft pliable bottle in combination with a dispensing cap/head structure which allows the user to squeeze the soft pliable bottle to force the composition in the container to pass through the cap and deliver the desired foam mousse product. Regardless of which structure is employed, the resulting foam mousse product is substantially equivalent and can be employed with equal efficacy in the present invention.

Alternatively, in those applications where delivery directly into cavities, such as the vagina or the rectum are desired, the squeeze bottle construction is

preferred. In addition, a soft, pliable, elongated tube or nozzle is mounted to the cap, to enable the foam mousse product to be delivered directly in the particular cavity at the precise location of the inflammation or virus being treated. In this way, direct application is realized with ease and efficiency.

A further area in which it has been found that the present invention is highly effective in providing a therapeutic treatment system, which presently does not exist, is in treating or reducing the transmission of viral diseases, such as AIDS, herpes, and chlamydia. By employing the present invention with a suitable therapeutic agent incorporated therein, a prophylactic treatment system is realized for helping to prevent the transmission of these viral diseases.

In order to attain an effective anti-viral treatment system employing the liquid foaming soap composition of the present invention, it has been found that the therapeutic agent incorporated into the composition is preferably selected from the group consisting of spirulina, calcium-spirulan, nonoxynol-9, and hot water solution of spirulan. These compounds, along with other compounds being developed having equal efficacy, can be employed in the present invention in order to provide the desired prophylactic results.

Recently, it has been found that these compounds are capable of inhibiting viral replication, while strengthening both the cellular and hormonal arms of

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liquid foaming soap product is attained which is free of any aerosol or gaseous foaming member or foam producing agent/ingredient. Furthermore, in accordance with the present invention, the entire dispensing system comprises a small, compact, non-pressurized container, within which the liquid foaming soap formulation of the present invention is retained, along with a foam producing dispensing valve/head or cap.

In accordance with the present invention, a unique liquid foaming soap formulation is realized which provides a soap product capable of being dispensed as a foamed mousse, having the thickness and density required for providing a smooth comfortable shave for all beards, legs, underarms, and any other desired areas to be shaved. In addition, the formulations of the present invention may comprise all natural ingredients while enabling women to shave their legs without water.

Due to the thickness and density achieved by the foam mousse produced by the present invention, the shaving foam product of this invention retains its moisture while on the surface to be shaved. In addition, the shaving mousse of this invention produces an inherent low friction, gliding surface over which a razor comfortably passes while cutting the desired beard or hair fibers. In addition, it has been found that the shaving mousse substantially increases the

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ability of causing hair or whiskers to become erect, further enhancing and improving the closeness of the shave. As a result, shaving of any desired area is achieved with a high comfort level, while also assuring close cutting of all hair follicles. Furthermore, due to these highly desirable characteristics, even sensitive skin is able to enjoy a close and comfortable shave, virtually devoid of any irritation or discomfort.

Furthermore, in using the present invention with a dry shaver, only a small amount of the foam mousse product is employed to attain the desired results. Once a small quantity of mousses is spread over the face of the user, a close and comfortable shave is realized.

In order to attain the desirable and previously unrealized results provided by the present invention, the shaving mousse of the present invention is achieved by combining a low viscosity or liquified soap in combination with a suitable dispenser. In accordance with this invention, a conventional container is employed which incorporates a valve or dispensing cap capable of receiving the liquified soap, and delivering a foamed shaving mousse. In this way, all of the prior art inabilities are completely eliminated and a unique, compact, foam shaving formulation and delivery system is attained.

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BEST MODE FOR CARRYING OUT THE INVENTION

By referring to the following detailed disclosure, various preferred constructions and formulations of the liquid foaming soap of the present invention, and the production of such compositions can best be understood. Although the following disclosure specifically details alternate formulations for the liquid foam soap compositions, as well as preferred methods for creating the compositions, alternate formulations and methods can be employed without departing from the scope of this invention. Consequently, it is to be understood that the following specific formulations and methods are provided for exemplary purposes and any alternate formulations and production methods coming within the scope of the present invention are intended to be encompassed therein.

In one preferred embodiment of the present invention, a multi-purpose, antiseptic, anti-bacterial, and/or anti-viral liquid foaming soap formulation capable of producing a thick, rich, moisture laden foam shaving mousse is attained.

By referring to Table IV, the preferred, specific formulation for this multi-purpose, antiseptic, anti-bacterial, and/or anti-viral improved liquid foaming soap

product is provided. Although these formulations may be varied, Table IV provides the preferred, specific formulation for this multi-purpose product.

TABLE IV

<u>Ingredient</u>	<u>% by Weight</u>
Polysorbate 20	10
Ammonium Lauryl Sulfate	30
Cocoamide DEA	5
Triclosan	0.2
Water	54.8

In order to attain a thoroughly intermixed, substantially homogeneous, multi-purpose improved liquid foaming soap composition employing the ingredients defined in Table IV, it has been found that a preferred mixing process be employed. In this regard, polysorbate 20 and triclosan are added to a first vessel, heated to about 65°C and continuously mixed together until fully dissolved. In addition, ammonium lauryl sulfate and cocoamide DEA are intermixed in a second vessel and heated to about 65°C. These components are also intermixed until fully dissolved.

By employing the process detailed above, or an equivalent process, a highly effective, multi-purpose, antiseptic, antibacterial, and/or antiviral liquid foaming soap composition is realized. As detailed above, the resulting composition is placed in a container which is then interconnected with a movable, finger operated foam dispensing cap/valve or a foam producing cap member which relies upon squeezing of the container for forcing the composition there through. Preferably, if this latter construction is employed, the foam producing cap member incorporates an elongated, soft, pliable, nozzle member mounted

thereto for enabling the delivery of the foam product directly to any desired site or location, such as an internal site located within a body cavity.

It has been found that by employing the present invention, a highly desirable, multi-purpose, antiseptic, anti-bacterial, and/or anti-viral liquid based foam soap product is attained, which can be used for hand and body washing, wet or dry shaving, and a wide variety of medical or medicinal purposes. In addition, by substituting an effective amount of another therapeutic agent for the triclosan incorporated in the formulation detailed above, a highly desirable, easily employed, foam soap product is realized which is capable of delivering a particular, desired therapeutic agent to a specific location for treating a specific medical need.

As detailed above, exemplary of such a medical purpose is the reduction in the spreading or transmission of diseases such as AIDS, herpes, and chlamydia by employing an anti-viral agent such as nonoxynol-9, spirulines, calcium spiruline and hot water solutions or spirulan. Furthermore, a liquid-based foam soap formulation particularly suitable for assisting in the treatment of burn victims is realized by employing povidone-iodine or silver nitrate solutions as the therapeutic agent.

Although specific alternate formulations for compositions employing alternate therapeutic agents are not specifically provided herein, such alternate formulations are clearly within the teaching of the present invention by employing the formulations and production steps detailed above. As a result, the incorporation of virtually any therapeutic agent into the basic formulations of the present invention is clearly within the scope of this invention and is intended to be encompassed by the claims of this invention.

In addition, it has also been found that the formulation detailed above produces a rich, thick, moisture laden foam which is equally applicable for use in both wet and dry shaving. By employing the foam mousse produced by the compositions detailed above, a foam mousse product is realized which is easily spread on the skin surface for enabling the user to shave either long hair or short hair, by employing conventional wet or dry shaving systems, such as razor blades or electric shavers. As a result, a highly effective, multi-purpose, liquid based foam soap product is realized by the present invention.

In addition to the foregoing detailed formulations, it has also been found that a thick, rich, moisture laden foam shaving or mousse is attained by employing the overall teachings of the present invention, as detailed above, by using various other surfactants, foaming agents, and combined foaming agents/

surfactants. In this regard, it has been found that a highly desirable foam shaving mousse is realized by intermixing stearic acid, coconut oil acids, purified water, and pH adjusting agents.

In the preferred construction of this embodiment, the stearic acid comprises between about 2% and 5% by weight based upon the weight of the entire composition, while the coconut oil acids comprise between about 20% and 30% by weight based upon the weight of the entire composition. The purified water and the pH adjusting agents with natural fragrances and preservatives forms the balance of the improved liquid soap formulation.

By employing these ingredients, an all-natural, liquid foaming soap product is attained which is capable of being employed to provide the desired thick, rich, moisture laden foam shaving mousse. It has also been found that the liquid foaming soap product of the present invention may be further enhanced and improved by incorporating other agents into the basic formulation, such as preservatives, fragrances, pH adjusting agents, and the like. In this regard, the pH of the product is preferably maintained at about 9.2.

In Table V, one overall preferred formulation for the all natural, shaving foam producing, improved liquid soap of the present invention is provided. As detailed in Table V, the preferred ingredients are provided, along with the

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preferred quantity range for each ingredient, detailed as the percent by weight for that ingredient, based upon the weight of the entire composition. By employing compositions consistent with the formulations defined in Table V, and dispensing the formulations as detailed herein, a foamed shaving mousse is achieved which is capable of providing all of the attributes desired in a smooth, close, comfortable shave, using either blades or electric shavers.

TABLE V

<u>Ingredients</u>	<u>Quantity % by Weight</u>
Stearic Acid	1 - 20
Potassium Cocotte	4 - 40
pH Adjusting Agents	1 - 10
Enhancing Agents	0.5 - 5
Preservatives	0.1 - 0.8
Water	Balance to 100%

In order to further define preferred formulations of the all natural, foam producing, improved liquid soap of the present invention, Table VI is provided

to specifically define a more detailed composition. In Table VI, the preferred additives and enhancing agents are fully disclosed. In Table VI, each of the ingredients are defined in a preferred quantity range, with the amount provided as a percent by weight, based upon the weight of the entire composition.

TABLE VI

<u>Ingredients</u>	<u>Quantity % by Weight</u>
Stearic Acid	2 - 20
Potassium Cocotte Acids	10 - 40
Glycerin USP	0.5 - 5
Water	50 - 90
Citronellol	0.5 - 1.0
pH Adjusting Agent	2 - 10

In carrying out the present invention, an all-natural, liquid foaming soap formulation is produced consistent with the formulations defined above, with the liquid foaming soap formulation being placed in a conventional liquid product holding container. Since pressurization of the composition is not required, the

By employing the liquid based foam producing soap and dispensing system of the present invention, a highly desirable foam mousse is achieved and dispensed from the container, having the thickness and density required for

providing a smooth comfortable shave. In addition, the shaving mousse produced by the present invention is constructed to provide a low friction, gliding surface over which a conventional razor or electric shaving system is able to comfortably pass while cutting the desired beard or hair fibers.

Due to the inherent, desirable physical characteristics of the foam mousse produced by the improved liquid soap formulation and dispensing system of this invention, a close comfortable shave is realized, with virtually no irritation or cuts being produced. Consequently, even sensitive skin is capable of enjoying a close and comfortable shave without discomfort.

Due to the substantial quantity of water employed in the formulations of this invention, it has been found most desirable to lather the skin first with the foam mousse, and then pat on additional water. In this way, especially when using dry shavers, the application and use of the foam mousse adjusts the skin for the razor. By patting on water, the skin then allows the razor to take full advantage of the slipperiness of the shaving surface, face, or legs.

In an alternate embodiment of the present invention, the desired foam shaving mousse is obtained by employing an all natural liquid soap formed from vegetable oil base which has been split using steam. In the preferred embodiment, the vegetable oil base employed in the present invention is selected from

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the group consisting of palm kernel oil and coconut oil. For the neutralization of the generated fatty acid, potassium hydroxide has been used. In order to obtain the desired liquid soap formulation, the partially neutralized fatty acids are intermixed with water, heated and agitated. In addition, the pH is adjusted until a pH of between about 9.2 and 10 is achieved. If desired, pH adjusting agents, enchanter, fragrances, and preservatives may be added to the formulation to obtain the final liquid foaming soap product of the present invention. In the preferred embodiment, these additives include aloe vera, rosemary extracts, citric acid, and a blend of natural essential oils.

In the preferred formulation, based upon the weight of the entire composition, the vegetable oil based ingredients ranges between about 30% and 60% of the weight and water makes up about 50% to 90% by weight. These quantities are reduced by the quantity employed for any additive which is desired.

As discussed above, the pH of this embodiment of the liquid foam soap composition is preferably maintained between about 8.8 and 10. More preferably, it has been found that a pH of between about 9.2 and 9.4 is most desirable. It has been found that at a pH level below 9.2, the ingredients may separate and/or may require the inclusion of a preservative. In addition, during the formulation of the liquid foam soap composition, the viscosity of the composi-

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